

Lebanese Current & Future Gas Market



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Lebanese Current & Future Gas Market

- Introduction
- Today's Situation
- Plans & Schedule for Execution
- Demand & Growth
- Domestic Market

Introduction



Beddawi Power Plant

- Beddawi Power Plant 450 MW
- Zahrani Power Plant 450 MW
- Baalbak Power Plant 70 MW
- Tyr Power Plant 70 MW

1996 New Gas Fired PP of
capacity 1GW



Zahrani Power Plant

In 1999

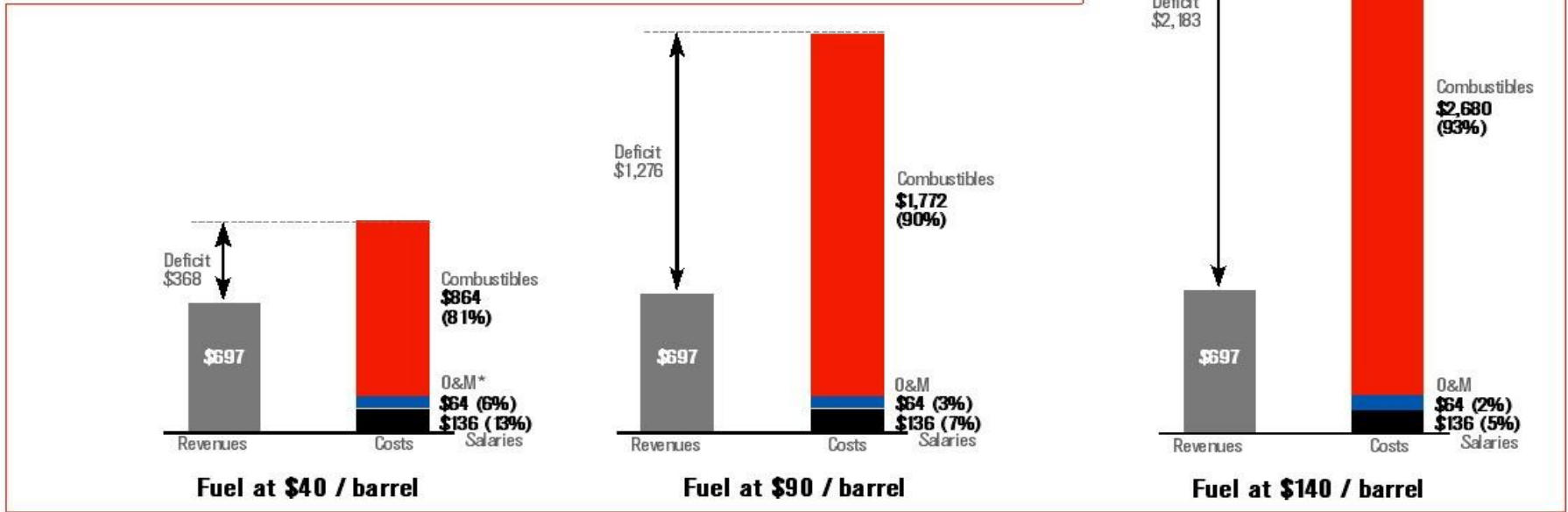
- KBR (Kellogg Brown & Roots) feasibility study and economics for a liquefied natural gas (LNG) receiving terminal in Lebanon.
- The cost was very high , more than 3 billion dollars.



Today's Situation

- The four existing Power Plants are using Gas Oil instead of Natural Gas causing a deficit more than 1.9 B\$/year

EDL deficit increases relative to rising fuel costs (in \$millions)



* O&M = Operations and management
 Source: Report published by the Lebanese Energy and Water Minister Alain Tabourian

LNG is a diversified fuel source to Power Generation and potential supply to Industrial demand

- Lebanon intends to procure LNG to supply the power sector (existing CCGT plants and future CCGTs)
 - The government intends that future gas fired Power Plants will be built – approvals has been given for adding about 700 MW (Dier Ammar (2) 450 MW “CCGT”, Zouk 180 MW “RE” & Jieh 80 MW “RE”)

- Lebanon only source of natural gas at present, the Gasyle 1 P/L from Syria (2009-2010), a branch from Arab Gas Pipeline that was fed by Egyptian NG, has been unable to deliver gas since 2010.

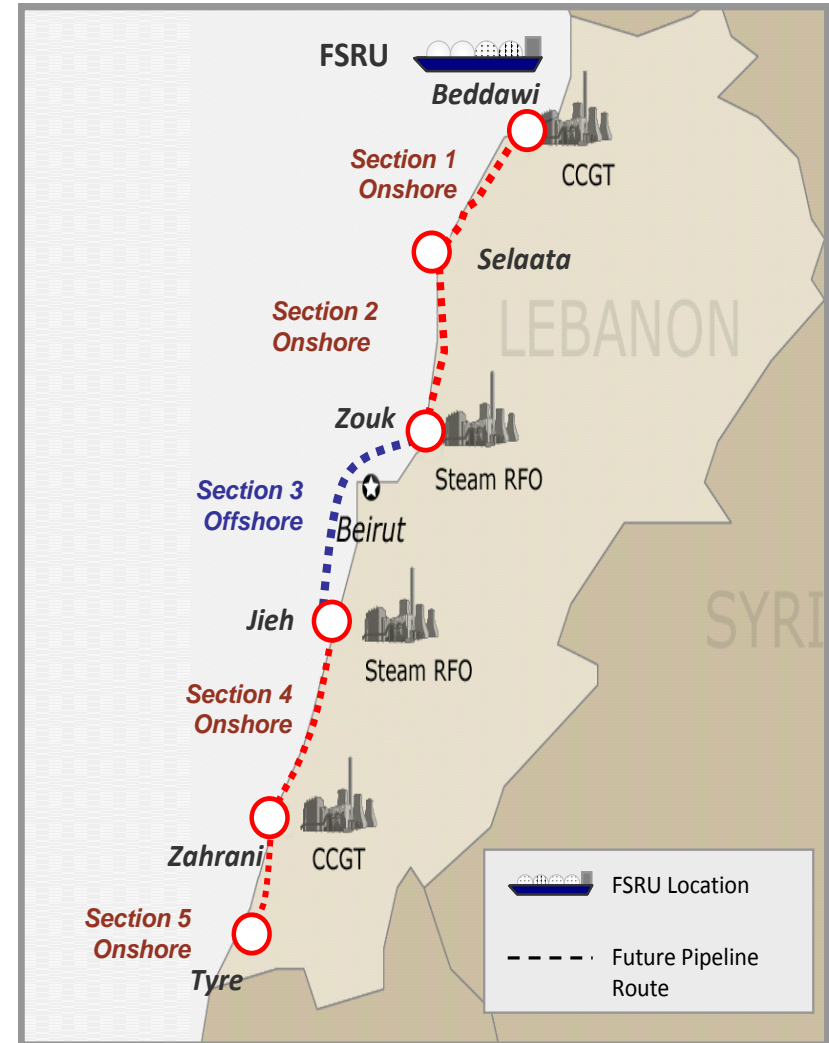
SAVINGS 30 M\$/MONTH



COASTAL GAS PIPELINE INTERCONNECTING ALL COASTAL POWER PLANTS

- From Beddawi (N) to Tyr (S)
- 36" inch Dia
- 173 km of length
- Construction to Start by 2013
- Time frame 28 months
- Financing Program law for 3 years awaiting to be ratified.
- Private sector can participate in financing the P/L
- 19 companies were prequalified for construction of P/L

Lebanon Power Stations & Proposed Gas Infrastructure



Source: Poten & Partners



Domestic market will require natural gas

➤ Industrial market will require natural gas

- There is potential to supply industries where a clean fuel might benefit product quality
- The availability of NG could also encourage the establishment of energy intensive industries in the future.



➤ Public and Private Transportation :

- A law is awaiting to be ratified by MP.
- Saving could be more than 40% on the fuel bill.
- Clean fuel might benefit product quality and the environment

➤ City Gas:

- Natural Gas to be distributed to cities to be used for home appliances and heating where infrastructure is possible.



IMPORT TERMINAL

FSRU technology is preferred for Lebanon

- Proven technology.
- Fastest solution 22 month of construction time vs 42 month for on shore terminal.
- Offers lower upfront capital expenditure.
- The hire of an FSRU could be done for a limited period (12 years), allowing domestic NG to eventually supply of the gas demand for Lebanon next decade if the coming offshore drillings are successful .



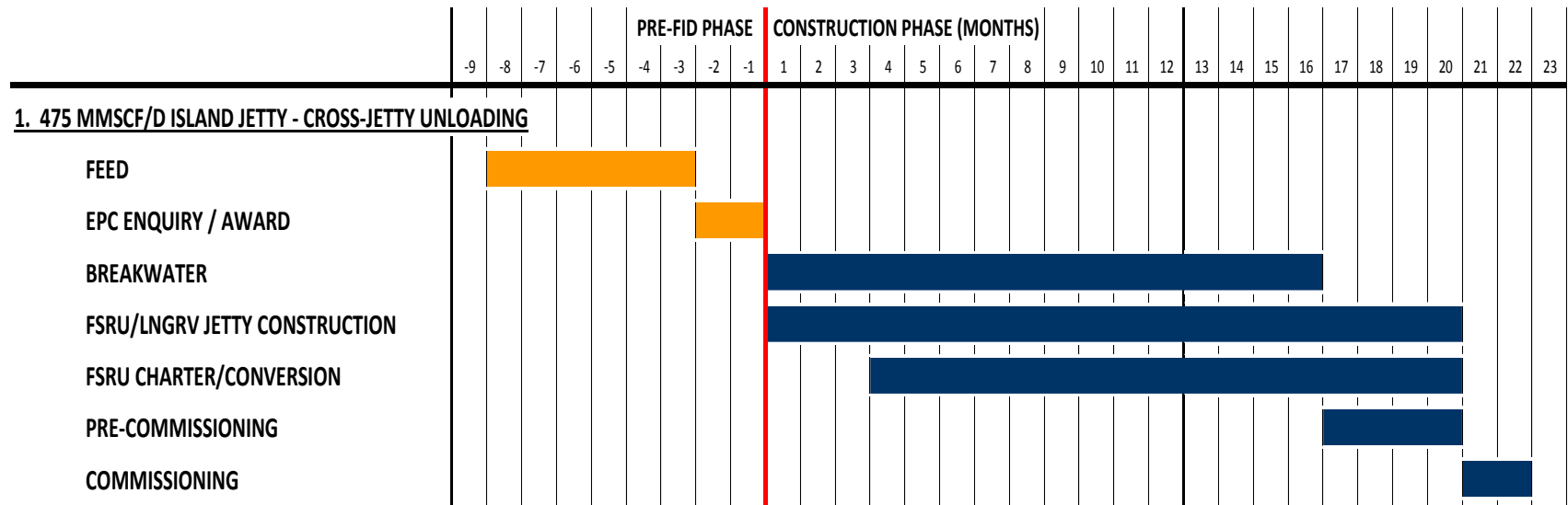
Beddawi Site naturally sheltered – Lower Capex

FSRU Site



Site is naturally sheltered from predominant southwest wind and wave, but may require northern exposure breakwater protection
Both Zahrani and Selaata are fully exposed to the weather and will require complex and expensive breakwaters for protection

FSRU typical development schedule



- Expression of Interest released April 4th 2012 followed by strong positive response
- Short listing of companies was completed and then the pre-qualified will move to the next RFP stage
- MoEW aims to select developer by 1st quarter 2013 with commissioning of the FSRU achieved by mid-2015

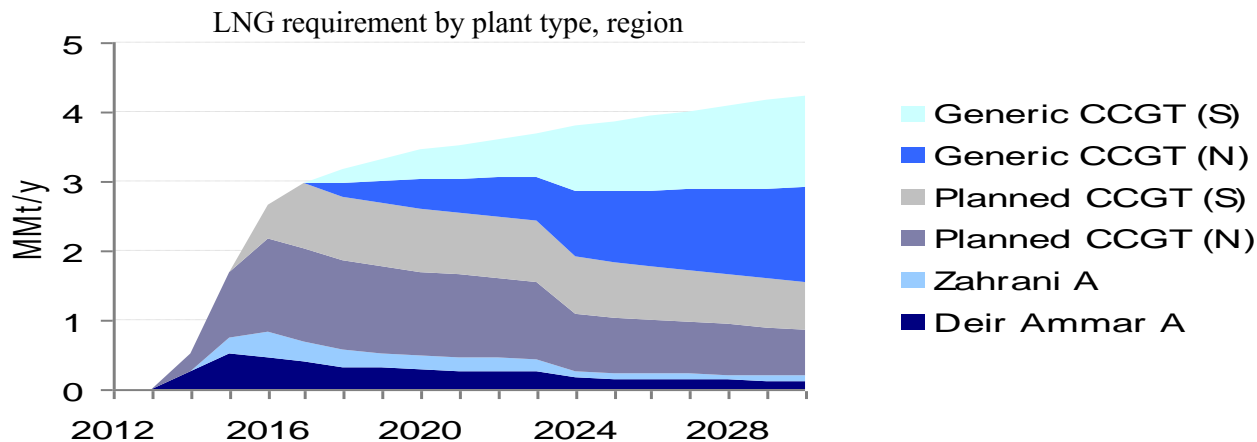
Future Demand & Growth

➤ Gas consumption overall could reach 4.7 Bcm/y by 2020, requiring 3.4 million tonnes of LNG, after a rapid build-up

- Gas consumption will grow rapidly starting 1.2 tonnes in year 2015, 1.7 tonnes in 2016 and reaches 4.7 Bcm/y (equivalent to 3.4 million tonnes of LNG) by 2020, after a rapid build-up
- Gas consumption in 2030 could reach 5.8 Bcm/y (4.2 MMT/y).

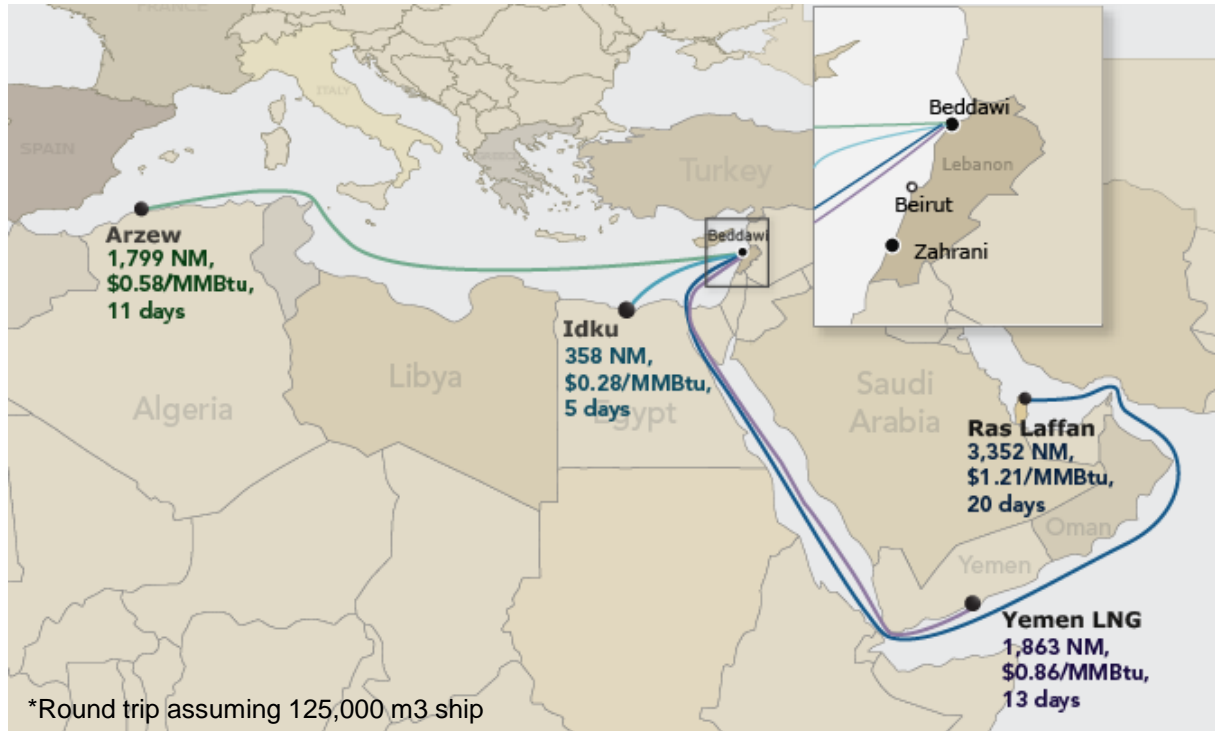
At base load, currently the existing Deir Ammar and Zahrani CCGTs would consume around 0.7 Bcm/y (0.5 MMT/y) each

•The planned new CCGT at Deir Ammar would consume a similar amount. Generation and hence gas consumption at the existing CCGTs would, however, increase as newer, more efficient CCGT power plants are built.



Lebanon is well positioned to attract supply

Shipping Costs to Lebanon



More than 120 MMt/y of LNG produced within 3,500 NM from Lebanon
(50% of global production!)

Conclusion

- Lebanon will be ready on its infrastructure to be supplied by Natural Gas and will be a good consumer in the market by 2015
- Major consumption of oil distillates will eventually start to be replaced by Natural Gas by 2015

**Expected savings starting 2016 will exceed
1 B\$/year in the electricity sector and over
2 B\$/year on the economy**

Thank You

